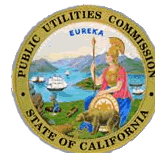


**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to Consider
Streamlining Interconnection of Distributed
Energy Resources and Improvements to
Rule 21.

Rulemaking 17-07-007
(Filed July 13, 2017)

**MOTION OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
TO ESTABLISH SUB-GROUP AND SCHEDULE JOINT WORKSHOP IN
RULEMAKINGS 17-07-007 AND 18-12-006 TO INTRODUCE SUB-GROUP PROPOSAL
ON MOBILE INVERTER TECHNICAL REQUIREMENTS FOR RULE 21
INTERCONNECTION**

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May 29, 2019

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ON MOBILE INVERTER TECHNICAL REQUIREMENTS FOR RULE 21
INTERCONNECTION**

In accordance with Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the California Energy Storage Alliance (“CESA”)¹ hereby submits motion to request that the Commission establish the Vehicle-to-Grid (“V2G”) AC Interconnection Sub-Group in Rulemaking (“R.”) 18-12-006 and R.17-07-007 to discuss and identify existing standards that can be combined to fulfill safety requirements for interconnection of a mobile

¹ 174 Power Global, 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, Aggreko, Alligant Scientific, LLC, AltaGas Services, Amber Kinetics, Ameresco, American Honda Motor Company, Inc., Avangrid Renewables, Axiom Exergy, Better Energies, Boston Energy Trading & Marketing, Brennmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Clean Energy Associates, ConEd Battery Development, Customized Energy Solutions, Dimension Renewable Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, EDF Renewable Energy, eMotorWerks, Inc., Enel X North America, Energport, Energy Vault, Engie Storage, E.ON Climate & Renewables North America, esVolta, Fluence, Form Energy, General Electric Company, Greensmith Energy, Gridwiz Inc., Hecate Grid LLC, Highview Power, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Lendlease Energy Development, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Energy Solutions, LS Power Development, LLC, Magnum CAES, Malta Inc, NantEnergy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., Nuvve, Pattern Energy, Pintail Power, Plus Power, Primus Power, PolyJoule, Quidnet Energy, Range Energy Storage Systems, Recurrent Energy, RES Americas, SNC-Lavalin, Soltage, Southwest Generation, Stem, STOREME, Inc., Sunrun, Swell Energy, Tenaska, Inc., Tesla, True North Venture Partners, Viridity Energy, VRB Energy, WattTime, and Wellhead Electric. The views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (<http://storagealliance.org>).

inverter. Furthermore, this Motion requests that the Commission schedule a joint workshop in R.18-12-006 and R.17-07-007 to present findings and the recommendations from the sub-group and allow for stakeholder feedback from the relevant stakeholders in the R.18-12-006 and R.17-07-007 proceedings during the workshop and following the workshop via comments. CESA submits this Motion so that any recommendations from the sub-group can be entered into the public record for Commission consideration.

I. INTRODUCTION.

Issue 23, one of many scoped issues, within Rule 21 Working Group 3 is tasked with addressing the following interconnection question: “Should the Commission consider issues related to the interconnection of electric vehicles and related charging infrastructure and devices and, if so, how?” Stakeholders within the working group have diligently and collaboratively working on addressing this question and developing consensus proposals for the Commission’s consideration. Stakeholders generally agree that V2G devices must comply with Rule 21 requirements when operating in bi-directional charge and discharge mode.

Two categories of V2G interconnection use cases have been identified over the course of the working group process. First, for the V2G DC use case, where bi-directional inverters are built into a stationary electric vehicle supply equipment (“EVSE”), stakeholders are in the process of reaching consensus on a range of proposals for interconnection under Rule 21, which requires compliance with the appropriate standards, certification, and testing for UL 1741-SA. Second, for the V2G AC use case, where inverter functions are built into the electric vehicle (“EV”) while in communication with the on-site stationary EVSE pursuant to automotive standards (*e.g.*, such as Society of Automotive Engineers [“SAE”] J3072), stakeholders have come to realize that additional time, beyond what has been allocated in Working Group 3, is needed to develop

technical recommendations to enable mobile inverter V2G AC interconnections. To address the V2G AC use case, the final working group report will include a recommendation to establish a technical sub-group inviting stakeholders from the Smart Inverter Working Group, R.18-12-006, and SAE, among others, to develop these technical requirements for the implementation of V2G AC interconnections.

However, according to *Assigned Commissioner's Amended Scoping Memo and Joint Administrative Law Judge Ruling* ("Amended Scoping Memo"), the timing and scoping of issues in Rule 21 Working Group 3 presents challenges to adequately resolve the highly technical issues involved in the V2G AC interconnection use case. The Scoping Memo proposed that the Working Group 3 Final Report be completed by June 14, 2019, followed by a workshop and Ruling on the report on June 21, 2019 and July 19, 2019, respectively. Comments on the report are then due in August 2019.² If past experience with the procedural timeline of Working Group 1 and Working Group 2 is any indicator of timelines for Working Group 3, CESA estimates that a Proposed Decision and Final Decision on Working Group 3 proposals will be issued in Q4 2019.

Instead of waiting for the Commission to rule on the Working Group 3 Final Report to take action on initiating technical sub-group discussions on V2G AC interconnection issues, CESA proposes in this motion an alternative procedural pathway to resolve technical V2G AC interconnection issues in a more timely manner. Rather, stakeholders interested in Issue 23 have agreed to form a technical sub-group, outside of the timing and scoping of issues as outlined in the Amended Scoping Memo, to continue discussions on the V2G AC interconnection issue and work toward developing proposals for addressing V2G AC technical requirements. Stakeholders agree that several additional months of dedicated technical discussions are needed to resolve the

² Amended Scoping Memo, p. 13.

outstanding Issue 23 issues that can then be re-incorporated into the Rule 21 Working Group 3 process. Since the Working Group 3 Final Report is expected to be submitted prior to resolution of the issues in this sub-group, CESA thus submits this Motion to formally establish this technical sub-group and to provide an opportunity for the technical sub-group to present its proposals (if any) in a joint workshop held in R.17-07-007 and R.18-12-006, after which CESA requests that the Commission grant parties in both proceedings leave to file and serve formal post-workshop comments that can inform the public record and supplement the Working Group 3 Final Report proposals on Issue 23.

II. PROPOSED SCOPE, SCHEDULE, AND OUTCOMES OF THE V2G AC INTERCONNECTION SUB-GROUP.

The sub-group will be led by CESA in coordination with the Commission staff and with active participation from one or more investor-owned utilities (“IOUs”). As the facilitator of the sub-group, CESA will be responsible for administering the sub-group meetings and for preparing the final deliverables to be submitted to the Commission. To ensure success and broad applicability of the sub-group’s efforts, CESA proposes to have this sub-group established jointly across both R.18-12-006 and R.17-07-007 proceedings, so that it is easier and more likely for EV manufacturers to attend and actively participate in these technical discussions.

The scope of the sub-group meeting discussions and the final deliverable will include some of the following, non-exhaustive list of issues:

- Fully map existing standards from Nationally Recognized Testing Laboratories (“NRTLs”) against each other (*i.e.*, SAE J3072, UL 1741)³

³ This was begun in the Issue 23 working group and resulted in productive discussions among the participants. The work output of that process may help inform this one.

- Have group determine how well the existing standards can be combined to fulfill safety requirements for interconnection of a mobile inverter at one fixed point
 - If existing standards are deemed sufficient for safe interconnection, the sub-group may recommend that the Commission include language citing existing standards to enable Rule 21 interconnection
 - If existing standards are deemed insufficient for safe interconnection, the sub-group may notify SAE and UL of gaps they need to fill in their respective standards

The above scope focused on assessing and leveraging existing standards follows the successful process from Rule 21 Working Group 3 in resolving V2G DC interconnection issues, where stakeholders identified existing UL standards that could be used to create a pathway for safe and reliable interconnection. With this focused scope and deliverable, the Commission will have clear recommendations from the sub-group if Rule 21 changes are needed to accommodate existing standards, or whether the Commission should provide guidance to standards bodies like UL and SAE on changes needed to their respective standards (based on the sub-group's gap analyses) before the Commission can rule on a pathway for interconnection of V2G mobile inverter resources.

Regarding the schedule, CESA recommends the following additions in red to the Rule 21 procedural schedule as outlined in the Amended Scoping Memo:

Working Group Three Report Due	June 14, 2019
V2G AC Interconnection Sub-Group Formation and Discussions (Noticed to Service Lists for R.17-07-007, R.18-12-006, and Smart Inverter Working Group)	June 20, 2019 Regularly-scheduled meetings thereafter
Workshop on Working Group Working Group Three Report	June 21, 2019
Ruling on Working Group Three Report	July 19, 2019
Comments on Working Group Three Report and Responses to Ruling	August 2, 2019
Reply Comments on Report and Ruling	August 12, 2019

V2G AC Interconnection Sub-Group Serves Proposal to Service Lists for R.17-07-007, R.18-12-006, and Smart Inverter Working Group	October 2, 2019*
V2G AC Interconnection Sub-Group Proposal Workshop	October 16, 2019*
V2G AC Interconnection Sub-Group Proposal Post-Workshop Comments Due in R.17-07-007	October 29, 2019*
V2G AC Interconnection Sub-Group Proposal Post-Workshop Reply Comments Due in R.17-07-007	November 5, 2019*
Working Group Three Proposals Proposed Decision (Including V2G AC Interconnection Sub-Group Proposal)	Q4 2019
Working Group Four Commences	TBD

**This is CESA's proposed date and indicates how the sub-group would approximately reach consensus and develop a final consensus proposal around this time, but the final date should be determined at the discretion of the Commission.*

CESA is open to different suggested dates and timelines, but in general, believes that the V2G AC Interconnection Sub-Group could prepare a proposal by late September or early October of 2019. With a workshop and post-workshop commenting opportunity thereafter, CESA believes that the sub-group proposal will then be entered into the public record for the Commission's consideration along with the other Working Group 3 proposals and prior to the Proposed and Final Decisions on the collection of Working Group 3 proposals, which we assume will occur in Q4 2019 based on previous procedural timelines. In doing so, CESA believes that this specific sub-issue will be resolved in a timely and flexible manner without delay to other non-related interconnection issues.

To successfully reach a proposal in accordance with the proposed schedule, CESA also tentatively proposes below a potential timeline for meetings and milestones of the V2G AC Interconnection Sub-Group. The actual timeline can be adjusted depending on Commission discretion, timing of Commission action on this Motion, and/or the status of actual discussions during the meetings that may necessitate changes to timelines.

Milestone	Purpose	Date
Meeting #1	Kickoff & Scoping	June 20, 2019
Meeting #2	Cataloging and Review of Existing Documents	July 10, 2019
Meeting #3	Gap Analyses of Existing Standards	July 17, 2019
Meeting #5		July 31, 2019
Meeting #6	Develop Standard Framework for Mobile Inverters	August 7, 2019
Meeting #8		August 14, 2019
Deliverable #1	First Draft of Sub-Group Proposal	September 4, 2019
Meeting #9	Discuss and Iterate on Final Draft of Sub-Group Proposal and Recommendations	September 11, 2019
Meeting #17	Update Non-IEEE Standards and Processes to Align with Framework Final Sub-Group Proposal	September 18, 2019
Meeting #18		September 25, 2019
Deliverable #2		October 2, 2019
Workshop	Joint R.18-12-006 and R.17-07-007 Workshop on Final Sub-Group Proposal	October 16, 2019
Comments	Post-Workshop Comments Due	October 29, 2019
Comments	Post-Workshop Reply Comments Due	November 5, 2019

CESA further details its rationale for this request below.

III. V2G AC INTERCONNECTION ISSUES REQUIRE SEVERAL MORE MONTHS OF DEDICATED TECHNICAL DISCUSSION THAT SHOULD NOT HOLD UP ALL WORKING GROUP 3 PROPOSALS NOR AWAIT A FINAL DECISION IN Q4 2019 TO MERELY INITIATE DISCUSSIONS.

CESA recognizes and respects that Rule 21 interconnection issues are often complex and technical in nature. In the past, the Commission has revised working group schedules to submit final proposals due to additional time needed for stakeholders to vet proposals and reach consensus. However, instead of delaying all Working Group 3 proposals and consequently the potential initiation of Working Group 4 discussions, as was done for Working Group 1 proposals,⁴

⁴ See, for example, *E-Mail Ruling Revising Schedule and Reassigning Issue Six*, issued on February 14, 2018 in R.17-07-007. <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M211/K794/211794527.PDF>

CESA recommends that the Commission grant its motion to allow a single Rule 21 Working Group 3 sub-group within Issue 23 to continue stakeholder discussions, including a broad cross-section of stakeholders from the Smart Inverter Working Group and R.18-12-006. It is reasonable to not have the resolution of a single sub-issue hold up the resolution of other non-related issues.

Furthermore, CESA is submitting this motion because the Working Group 3 Final Report will merely recommend that additional technical discussion is needed on the V2G AC interconnection issue since the time allocated on this sub-issue was insufficient within Working Group 3. However, CESA finds it more reasonable to go ahead and begin these follow-up technical discussions immediately rather than await the Commission's Final Decision on this recommendation so that proposals from the sub-group could potentially be incorporated in the suite of Working Group 3 proposals, thus allowing for the V2G AC interconnection proposal to be considered alongside other Working Group 3 proposals in the Proposed Decision and Final Decision at the end of this year. As a result, V2G AC resources could have a pathway to interconnection in Q1 or Q2 2020. Otherwise, without this procedural flexibility, V2G AC interconnection discussions would not begin until early 2020, with resolution of these issues and implementation of resulting solutions not occurring until 2021 or later in a subsequent working group process or a successor Rule 21 proceeding. Many V2G AC systems are commercially available today and such prolonged delay would only serve to delay the deployment of V2G AC resources that can support greater transportation electrification, provide grid services and renewables integration support, and provide additional customer benefits.

Due to these timing considerations, CESA thus recommends that the Commission grant its motion herein to provide some procedural flexibility while not delaying the pathways to approval for other non-related interconnection issues. Importantly, CESA also notes that there is strong

stakeholder commitment from CESA, Southern California Edison Company (“SCE”), EVSE providers, automotive manufacturers and integrators, and SAE, among others to dedicate time to the aforementioned sub-group process to expeditiously resolve V2G AC interconnection issues, such that a prolonged delay is unnecessary.

IV. OTHER PROCEDURAL VENUES MAY NOT RESOLVE THESE V2G AC INTERCONNECTION ISSUES IN A TIMELY MANNER AND/OR WOULD NOT RECEIVE THE DEDICATED TECHNICAL FOCUS.

During the Rule 21 Working Group 3 process, a number of potential procedural venues to address these technical interconnection issues were raised as possibilities. Rather than divert the attention of other working groups, CESA recommends that a dedicated and focused technical sub-group, as proposed herein, work to develop a consensus proposal to be later submitted and presented in a workshop in R.17-07-007.

CESA understands that R.18-12-006 will address a range of issues related to vehicle electrification rates, infrastructure, and vehicle-grid integration (“VGI”) issues, with a Scoping Memo expected in the coming weeks. While the V2G AC interconnection sub-issue could be scoped there, CESA believes that R.18-12-006 and the VGI Working Group, which is expected to convene by July 31, 2019 at the latest, are already overloaded with a wide range of issues. The Rule 21 proceeding is the appropriate forum to discuss this sub-issue, given that it requires the involvement of IOU interconnection engineers and specific Rule 21 changes and processes – *i.e.*, this is a technical interconnection, standards, and reliability issue. At the same time, certain stakeholders (particularly automotive OEM companies) from R.18-12-006 and the VGI Working Group would benefit from being involved in the V2G AC Interconnection Sub-Group, so CESA recommends that R.18-12-006 stakeholders also be able to actively participate by having this sub-group established jointly across both proceedings.

Similarly, the Smart Inverter Working Group (“SIWG”) was also raised as a possible venue to address these outstanding or longer-term issues, but CESA is again concerned that the SIWG is already tasked with a large agenda, including the timely implementation of Resolution E-4898 functions, which have already been delayed multiple times. Again, certain stakeholders from the SIWG may still benefit from being involved in the V2G AC Interconnection Sub-Group, so CESA recommends that the stakeholders on these service lists be noticed and be subscribed, if interested in participating in these proposal development discussions.

Additionally, as discussed in the Amended Scoping Memo, the Interconnection Discussion Forum (“IDF”) is another potential venue to encourage discussion and collaboration between the IOUs and developers.⁵ However, the quarterly frequency of the IDF and the purpose of the IDF to develop a shared understanding and best practices would not be conducive to detailed technical proposal development, as intended by the V2G AC Interconnection Sub-Group. IDF is more suited to high-level discussions and possible scoping within the Rule 21 docket, rather than a detailed discussion of complex technical topics.

Altogether, CESA thus finds that the other procedural venues are not the best fits for the V2G AC interconnection issues. A dedicated and focused sub-group as proposed herein with committed stakeholders would best address these issues in a timely manner.

⁵ Amended Scoping Memo, p. 8.

V. **CONCLUSION.**

CESA appreciates the opportunity to submit this Motion and looks forward to collaborating with the Commission and stakeholders in this proceeding.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Alex J. Morris'.

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